

Amendments to the Claims:

Please cancel claims 1-30.

Please substitute the following claims 31-42.

CLAIMS:

31. (New) An angle detection apparatus producing an angle signal representative of a relative angle between the angle detection apparatus and a magnetic field source that is rotatable on a rotation axis and produces a magnetic field, the angle detection apparatus comprising

first and second magnetic sensor units for detecting first and second magnetic components of the magnetic field of the magnetic field source, the first and second components oriented orthogonally to each other and lying in a plane running orthogonally to the axis of rotation of the magnetic field source,

driving means for driving the first and second magnetic sensor unit, and

control means coupled to the driving means, wherein in a first mode of operation the control means control an output signal of the first magnetic sensor unit so as to have a fixed value and the driving means drive the second magnetic sensor unit according to the same drive conditions as those applied to the first magnetic sensor unit at the time when the first magnetic sensor unit is controlled by said control means, so that an output signal of the second magnetic sensor unit is proportional to the tangent of said relative angle.

32. (New) The angle detection apparatus of claim 31, wherein in a second mode of operation the control means control the output signal of the second magnetic sensor unit so as to have a fixed value and the driving means drive the first magnetic sensor unit according to the same drive conditions as those applied to the second magnetic sensor unit at the time when the second magnetic sensor unit is controlled by said control means, so that an output signal of the first magnetic sensor unit is proportional to the cotangent of said relative angle.

33. (New) The angle detection apparatus of claim 32, further comprising
means for disabling the control means in a third mode of operation, so that
neither the output signal of the first magnetic sensor unit nor the output signal of the
second magnetic sensor unit is controlled so as to have a fixed value,

area judging means for determining from the output signal of the first
magnetic sensor unit and the output signal of the second magnetic sensor unit an
angle area in which said relative angle lies, and

means for enabling the control means and selecting a mode of operation from
the first or second mode of operation according to the determined angle area.

34. (New) The angle detection apparatus of claim 31, further comprising means for calculating said relative angle, the means for calculating comprising

counting means for performing a counting operation, an output of the counting means representing a value θ ,

transforming means for transforming the value θ of the output of the counter into tangent θ , and

a comparator, the comparator having a first input to which in the first mode of operation of the angle detection apparatus the output of the second magnetic sensor unit is fed and a second input to which an output of the transforming means is fed, wherein an output of the comparator controls the counting operation and wherein at the end of the counting operation the output value θ of the counting means represents said relative angle.

35. (New) The angle detection apparatus of claim 32, further comprising means for calculating said relative angle, the means for calculating comprising

counting means for performing a counting operation, an output of the counting means representing a value θ ,

transforming means for transforming the value θ of the output of the counter into tangent θ , and

a comparator, wherein in the first mode of operation the output of the second magnetic sensor unit is fed to a first input of the comparator and an output of the transforming means representing tangent θ is fed to a second input of the comparator,

wherein in the second mode of operation the output of the first magnetic sensor unit is fed to the first input of the comparator and the output of the transforming means representing tangent θ is fed to the second input of the comparator, and wherein an output of the comparator controls the counting operation and wherein at the end of the counting operation said relative angle is determined from the output value θ of the counting means.

36. (New) The angle detection apparatus of claim 33, further comprising means for calculating said relative angle, comprising

counting means for performing a counting operation, an output of the counting means representing a value θ ,

transforming means for transforming the value θ of the output of the counter into tangent θ , and

a comparator, wherein in the first mode of operation the output of the second magnetic sensor unit is fed to a first input of the comparator and an output of the transforming means representing tangent θ is fed to a second input of the comparator,

wherein in the second mode of operation the output of the first magnetic sensor unit is fed to the first input of the comparator and the output of the transforming means representing tangent θ is fed to the second input of the comparator, and wherein an output of the comparator controls the counting operation and wherein at the end of the counting operation said relative angle is determined from the output value θ of the counting means.

37. (New) The angle detection apparatus of claim 31, further comprising a magnetic flux concentrator with a flat shape, wherein the first and second magnetic sensor unit each comprises at least one Hall element arranged near a periphery of the magnetic flux concentrator.

38. (New) The angle detection apparatus of claim 32, further comprising a magnetic flux concentrator with a flat shape, wherein the first and second magnetic sensor unit each comprises at least one Hall element arranged near a periphery of the magnetic flux concentrator.

39. (New) The angle detection apparatus of claim 33, further comprising a magnetic flux concentrator with a flat shape, wherein the first and second magnetic sensor unit each comprises at least one Hall element arranged near a periphery of the magnetic flux concentrator.

40. (New) The angle detection apparatus of claim 34, further comprising a magnetic flux concentrator with a flat shape, wherein the first and second magnetic sensor unit each comprises at least one Hall element arranged near a periphery of the magnetic flux concentrator.

41. (New) The angle detection apparatus of claim 35, further comprising a magnetic flux concentrator with a flat shape, wherein the first and second magnetic sensor unit each comprises at least one Hall element arranged near a periphery of the magnetic flux concentrator.

42. (New) The angle detection apparatus of claim 36, further comprising a magnetic flux concentrator with a flat shape, wherein the first and second magnetic sensor unit each comprises at least one Hall element arranged near a periphery of the magnetic flux concentrator.